An Experimental inquiry into the Cathartic Properties of the Podophyllum ~ Peltatum

By

Godwin Cotten Moore
of
North Carolina

"Full many a flower is born to blush unseen
And waste its sweetness on the desert air"

Gray

Philadelphia
1828

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It has ever been to me a subject both of astonishment and regret, that the virtues of our own indigenous plants have not been more attended to and their application to the management of disease more general. Let us but cast our eyes over the pages of any late popular work on the subject of Materia Medica, and how few are the articles there mentioned that we recognize as the production of the United States. Few indeed they are, but in this little number we claim to have made some of the most valuable contributions of any country since the introduction of this subject to the world. Should this not urge us to hope that by investigating the properties of those plants that ornament our hills and valleys many are yet in reserve to reward the diligence of any who may turn their attention to this object, and that the day is not far distant, when we shall be as independent of the old world for our resources in medicine as we are in our institutions or government. Is not the climate of the United States as propitious as that of any other section of the habitable world? Are not her lands as congenial to the growth of the vegetable creation? Here it is that in all that extin-

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-sive tract of Country stretching from Main to Georgia from the Atlantic to the Pacific we may find a region adapted to the production of such articles as we receive from the pleasant plains of France or Spain or from cold and inhospitable Libria or Sweden. What an ample field is then opened to the speculative and experimentalist in the abundance and variety of the productions of our land. Perhaps in the secluded valley or mountainous precipice some articles are yet to be discovered possessed of powers capable of reaching the seat of some of those diseases that now stand in the list of the opprobia medicorum, and as monuments of the inefficacy of our art. Is it rational to suppose that our country which nature has thrown in her most magnificent and beautiful mould, should be stinted or niggardly in her articles adapted to remedial purposes? And if our Rivers, Lakes, Plains and Mountains speak an approach to perfection, we cannot for a moment suppose that the work is defective in the Vegitable part of Creation.!!!

Having offered these few introductory remarks I propose to give in the following lines the result of a course of experiments made with

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one of our own indegenous roots in contrast with an article of high and deserved celebrity as a cathartic — the latter being also an inhabitant of the new world, but not of that portion included within the boundaries of the United States. The articles in question are the Podophyllum Pettatum and Convolvulus Jalapa. These experiments I respectfully submit to my able and very distinguished instructors being confident, that no attention or exertion on my part has been wanting to render them as accurate as the nature of the case would permit — giving to each a fair and unprejudiced trial.

The Convs Jalapa or the plant hitherto described by Linnaeus, Willdenow, Woodville and others by this title was first discovered growing near the city Xalapa in Mexico. it was afterwards supposed to be an inhabitant of the United States also; as identified with the Ipomaea Mecrorhiza of Michaux the father. Of the truth of this identity

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I shall not pretend to determine, but leave it to those more skilled in the Botanical history of the article under consideration. Having been introduced into the Materia Medica it became an object of considerable Medical research and has from that time down to the present supported an unimpeached reputation. Its sensible properties are thus described by a distinguished Professor. "It is brought to us in thin transverse slices, which are covered with a blackish wrinkled bark, are of a dark grey colour internally, marked with darker or blackish stripes. It has a nauseous smell and taste; and when swallowed it affects the throat with a sense of heat and occasions a plentiful discharge of Saliva. When powdered it has a yellowish grey colour,, and combined with Calomel it is a remedy of undoubted utility in many of the diseases to which our climate is subject. Per se it is subject to some disadvantages disagreeable in their nature: such as gaping and

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the constipation following a purgation from this article — this property appears to reside in the resinous part of the Root rather than the Gummy.
The class order and properties of this Medicine I conceive to be so well known to every one at all conversant with the subject of Materia Medica that any farther description or remarks on this plant would be altogether superfluous. To such as wish any farther knowledge of this article I would recommend a perusal of Professrs. Chapman and Coxe's valuable notices of this Medicine in their several works on the Materia Medica.

The Podophyllum Peltatum is a native plant, found in every section of the United States, under different provincial titles — as the May-Apple of the Carolina's — the Mandrake and Specacuanha of other parts of the country. It is among the first of the vegetable tribe, that makes its appearance above the surface in the spring (as early in the Carolina's sometimes

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as the middle of February) and is to be found in the vicinity of most of the swamps and morasses of all the southern country. It grows to the hight of from twelve to eighteen inches: two leaves alone shedding themselves with the fruit between them. This plant is peculiar in differing in the properties of its several parts — the leaves being Poisonous & Narcotic — the fruit esculent, and the Root actively Purgative.

The fruit appears to be perfected about the first of July — in a short time after this the leaves become yellow, wither and with the stems fall to the earth. The Root is now supposed to be in the greatest perfection for medicinal purposes; and when collected at this time and dried in the shade unquestionably constitutes one of our most efficient purgatives. It is unattended with that degree of griping and other disagreeable symptoms attendant on most of the Drastic Cathartics; and after the immediate effect of the medicine ceases it leaves a laxative tendency of the Bowels equal if not

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superior to that after the use of Castor Oil. When combined with Calomel it is a purgative in no way inferior to the Jalap either as an evacuant of Bile in Fever or in the promptness and certainty of effect in obstinate constipations. Exhibited uncombined it is possessed of some advantages which we do not meet with in the Jalap and which are calculated to place it on an equality of standing at least with that remedy: when its properties and virtues shall become more generally known. This I am confidant will be the decision of every unprejudiced reader from the results of the experiments here narrated.

I conceive it will answer no usefull purpose to give in detail the results of trials made with the Jalap whilst contrasting its virtues with the May-Apple. as the operation and effects of this Medicine are familiar to any one at all conversant with the administration of remedies in disease. The reputation of the Jalap stands on a firm basis. that of experience — the May-Apple

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is yet to be established. It would serve but to add to the number of pages of this essay without detailing a single fact that is not familiar to the most unlettered rustic. Such being my conviction I shall confine myself to a narration of the operation and effects of the May-apple only; giving a critical but concise account of its most visible effects as a cathartic and of its powers over the system generally; and afterwards shew the two in contrast

Experiment 1st Aug. 20th Gave this day to an adult twenty five grains of the Mandrake enveloped in a spoonful of honey. The effect of this dose for the first two hours was but slight — the urinary secretion somewhat increased — some degree of nausea existing — inconsiderable griping and this was felt at differant intervals of time. About the fourth hour after the exhibition of the dose. the operation commenced with a copious watery discharge. I observed that the nausea and griping were most considerable at this stage

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of the experiment. as in the operation of most of the Drastic articles of this class — this action was promoted for some hours by drinking plentifully of warm water-gruel. The immediate effect of this dose was five evacuations by stool. and afterwards leaving quite a soluble state of the bowels during the next day. The person to whom the article was administered laboured under an attack of Intermittent Fever — he was much benefited by the operation. constipation being removed and the inflammatory symptoms as indicated by the circulation much reduced. It proved itself a most efficient evacuant both of Bile & crudities found in the Primae viae — large quantities having passed off during the purgation. The powers of the Medicine appeared mild but efficient in every stage. fully meeting my most sanguine expectations. I will only add that this patient had no return of either ague or Fever after the exhibition of this article.

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Exper.t 2.d August 25.th Girl N— aged ten years took sixteen grains of May-Apple on this day disguised as in Exp.t 1.st. The effect of this dose during the first two hours differed in nothing from what has already been noticed in the trial of this article already narrated. (Exp.t 1.st) — The degree of nausea existing in this case perhaps somewhat greater — as in former instance griping inconsiderable. The discharge from the Salivary Glands as noticed in this experiment was considerably augmented: consequent I suppose on the slight nausea present during the operation.

This dose was productive in four hours of two watery evacuations not differing in colour from a natural loose passage. This persons health was perfect at the time of the exhibition of the dose and hence I infer the unaltered and healthy appearance of the stools. A subsequent experiment on this girl I suppose decisive as to the activity of the Jalap and May-Apple

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After waiting untill Sept. 21st I gave to this individual an equal quantity of Jalap as before given of Mandrake — it had no other effect in five hours than to produce nausea and the most intolerable griping — insomuch that at this time I gave an half ounce of the Sulphat Sodæ to relieve the sufferings of the girl by removing the offending Matter —

Exp. 6th Sept. 4 Gave this day to an adult twenty grains of the Mandrake enveloped in honey. The effect of this dose was much the same as described in the two former experiments — nausea greater than observed in any preceeding case owing to the weakness and irritability of stomach existing in this person who was sick of a Bilious Intermittent shewing a disposition to become continued — vomiting nevertheless did not occur.

About the third hour the Medicine commenced and continued operating actively, untill the bowels were thoroughly evacuated; having

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been assisted by a plentiful use of diluent drinks. Soluble bowels followed this operation as noticed in the two preceding experiments.

This person like the one mentioned in Expt. 1st had no return of the paroxysm after the operation just alluded to. Now whether this was the effect of the evacuation and consequent depletion of the System; or from some specific power resident in the article I will not decide, but rather suppose it the result of the Medicine as an evacuant. It is well known that this is an article of considerable repute amongst the lower class of persons in the Southern States for the cure of Intermittents. It is also said to be a remedy in common use with the aborigines of our country.

Expt. 4th Sept. 15. Thirty grains of the Mandrake were given to an adult on this day (more than exhibited on any former occasion) yet I did not perceive any considerable increase

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in the effects from the increased quantity given — the purgation more active when induced and the commencement of action accelerated. Neither nausea nor griping at all exacerbated. From all the experiments made with this article, I should suppose when exhibited per se; that this quantity was about the average dose for an adult of strong and unbroken constitution. So mild in most cases have I observed the action of this article to be, that I should estimate its virtues in the diseases of children equal even to the Vinum Palmati itself as a cathartic; as possessing all its qualities in this latter capacity without its constipating tendencies after the immediate effect.

I have in as brief a manner as possible given an account of the result of four experiments made with the Podophyllum Peltatum, with regard to its cathartic properties; and since all tend to confirm the same

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thing I think is unnecessary to extend the number to a greater length. I shall therefore report them only; but if it were necessary I could produce many many observations made by practitioners of some years experience. as well as many other trials made with this medicine by myself all corroborating and establishing the opinions here advanced.

From the nature of the experiments narrated above the similarity of action existing between the operations and effects of the Jalap and May-Apple will at once be obvious to any one at all conversant with the former. A difference of effect is observable in the following particulars. Soluble bowels almost invariably follow an operation from the May-Apple-directly the reverse of this is known to succeed the Jalap in all of preparations. There is yet another advantage possessed by the May-Apple - it does not appear when exhibited uncombined to act with that degree of harshness noticeable in the Jalap. We have not that

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intolerable griping sometimes to be met with as the consequence of a dose of the latter. In Exp.t 2.d it appears that equal quantities of the two articles in question were exhibited under equally favourable circumstances to the same individual; the May-apple was productive of two copious discharges, whilst on the contrary the Jalap was inactive farther than to produce its accustomed nausea & griping. I should sin against both light & knowledge to question for one moment the great importance of the Jalap as one of our most efficient purgatives when combined with calomel; but he who hath any regard for the torments of a fellow-being will pause ere he administer a dose of Jalap uncombined having once witnessed its painful effects. In opposition the Mandrake from experiments proves itself equally efficacious when compounded with Calomel as the Jalap - possessing every quality calculated to recommend it to the Medical world; uncombined the results are not surpassed by any of the most active Cathartics, without that degree of griping & other disagreeable

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concomitants attendant on most of the Drastic purgatives. Its activity is so well known to the farmers of the Carolina's. that it is a remedy in common use to clear the obstructed bowels of their diseased animals. With respect to the dose of the two articles, the one is equally bulky with the other, and swallowed with the same degree of difficulty, - with the exception of the pungency of the Jalap to the mouth and fauces - this property is absent in the Mandrake

Considering as I do that Nature has thrown in her remedies (more especially those included under the head of Cathartics) in the finest form for their application to the management of disease. I shall say nothing of the comparative effects of the two Extracts obtained from the Jalap & Mandrake. I would ask what superiority does the Extr.c of Jalap possess over that article in the form of the powdered Root? Have we as all added to the efficacy of this remedy in the management - of those diseases to which it has been applied heretofore? Have we not rather added to that property which so much detracts from the value of this Medicine

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in many cases; by throwing it in a more concentrated form and removing that portion of vegetable matter which serves in a measure to mitigate its violence in the crude state? This I should suppose to be equally applicable to all Pungative Extracts.

The conflict of opinion concerning the powers of the Podophyllum is easily reconciled when we take into consideration its comparative virtues when collected at different seasons of the year; and the great influence the process of drying seems to exercise over its efficacy as a medicine. If collected in the Spring when the Sap of the plant is universally diffused over its different parts; observation has condemned it as a Remedy. It is only when the stem and leaves no longer require nourishment and when all its fluid parts appear to center in the Root that we may expect its beneficial effects. From its having been collected at an improper time and prepared indifferently would I suppose account for the failure of this Remedy in the hands of some

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and for the consequent diversity of opinion with regard to its powers. If it has succeeded in the hands of some persons of veracity a negative experiment should discredit it. Should we not rather infer the article to have lost its virtues in some one of the modes just alluded to? In placing the Mandrake on an equality of standing with the Jalap, I may be looked upon by some as an enthusiast and as one borne away by preconceived prejudices; but such is my conviction after having experimented extensively with the two articles in question - and it is an opinion founded only on the results of experiment and not from any prior prepossession. Confident I am if the spirit of research and experiment in the vegetable kingdom of the United States was awakened and now cultivated in the breast of her sons we should no longer look to another region for support in our Materia Medica; but in the many articles that now serve only to cumber the earth we should discover

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I must now bring to a close this essay clothed as it may be with numerous imperfections; but the inexperience of youth will be a sufficient extenuation for any such deficiency to all benevolent minds.

If I may have insisted too strenuously on the supposed virtues of the Podophyllum or portrayed the disadvantages of the Jalap in colours exagerated; attribute it rather to the ardour of a youthfull imagination than from any wish to mislead those into whose hands this may fall. A faithfull narration of facts has been the extent of my ambition entitles prensing these pages; bearing in mind

"Veritas est Magna et prevalebit."

Godwin Cotton Moore